



Sohan Saraf
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on building typology

Chapter 13

NextGen Housing Research

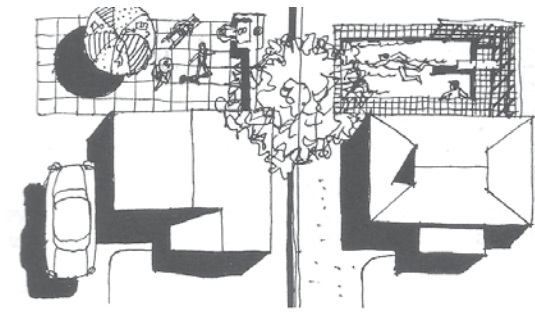
A RANGE OF HOUSING TYPOLOGIES

'housing' does not only refer to a house as a physical structure, but encompasses all the different elements that constitute a human settlement. Urban environments that display high quality private space, communal space and access to facilities, contribute positively to the living conditions of residents. The physical, social, psychological and cultural environments contribute to the creation of a 'sense of place'. A high quality urban environment brings about a positive sense of place, which in turn contributes to high levels of resident satisfaction, ownership and identity.

1 Building and site design, in particular, contribute significantly to the 'sense of place' and quality of a housing development.

2 More specifically, building costs, service provision and service costs, the nature of the unit, the configuration of the open space system and residents' perception of and satisfaction with their housing environment, are all determined by housing typology.

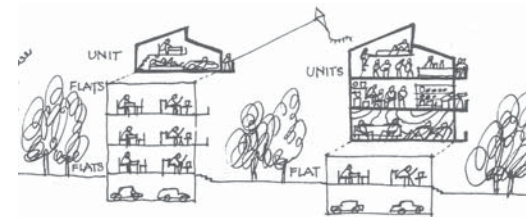
Houses can be built in a large variety of configurations. A basic division is between free-standing or detached dwellings and various types of attached or multi-user dwellings. Both sorts may vary greatly in scale and amount of accommodation provided. Although there appear to be many different types, many of the variations are purely matters of style rather than spatial arrangement or scale.



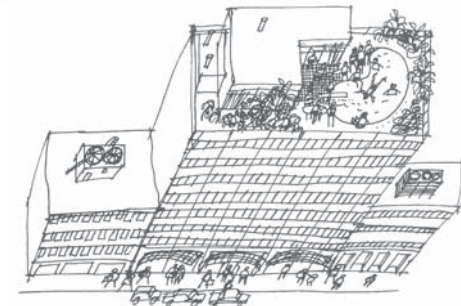
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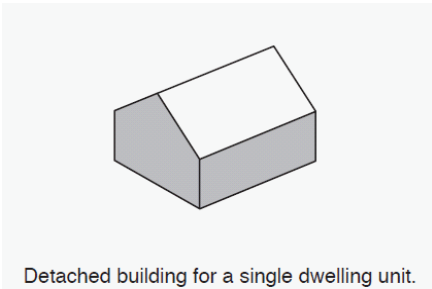



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Detached House



<p><i>common names</i></p> <p>House Cottage Villa Bungalow</p>	<p><i>variations</i></p> 
<p><i>data</i></p> <p>1 unit/building 1-3 floors/building exterior entry net site density: up to 15 units/acre</p>	

Single family house separated from neighbours on all four sides. The most desirable type of housing for many, especially families.

Allows for great variety of floor plans, as well as personalization and expression of individual identity.

Great range of variations throughout the world.

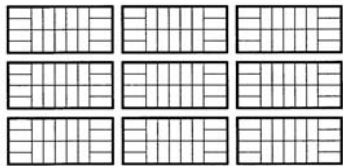
Clear definitions of public and private space.

Trend toward larger units consumes more material and energy.

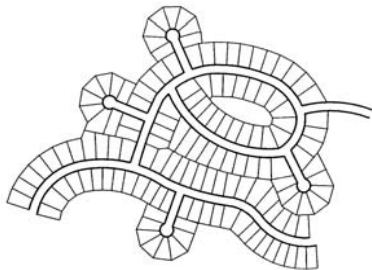
Number and type of retail and public amenities within walking distance can be limited due to lower numbers of residents



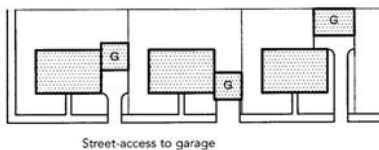
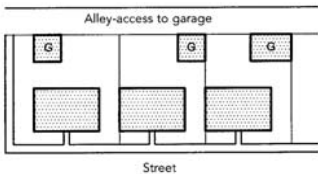
Sterrt layout alternatives in single-family communities grid layout configuration



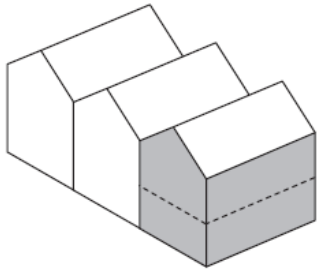
Sterrt layout alternatives in single-family communities cul-de-sac layout configuration



Variations on garage locations for detached housing

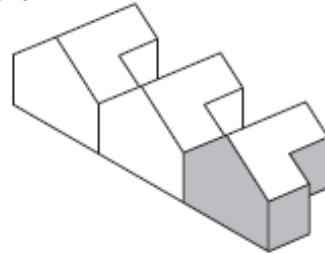


Townhouse / RowHouse / Joint courst / Terrace house



Multiple dwelling units arranged in rows, each with exterior ground floor access

Variations



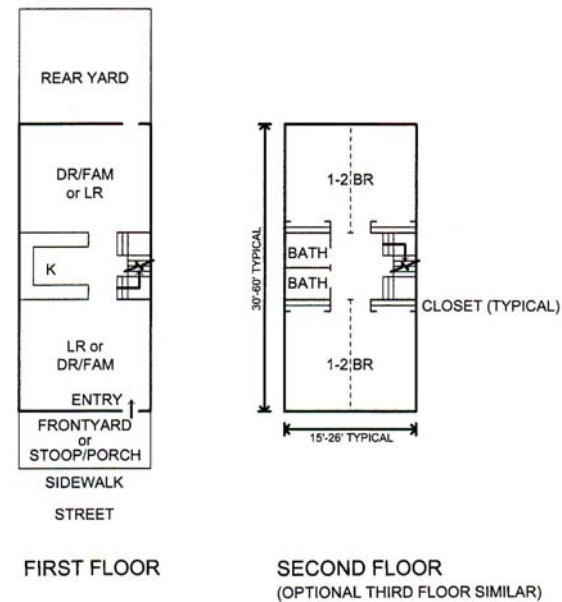
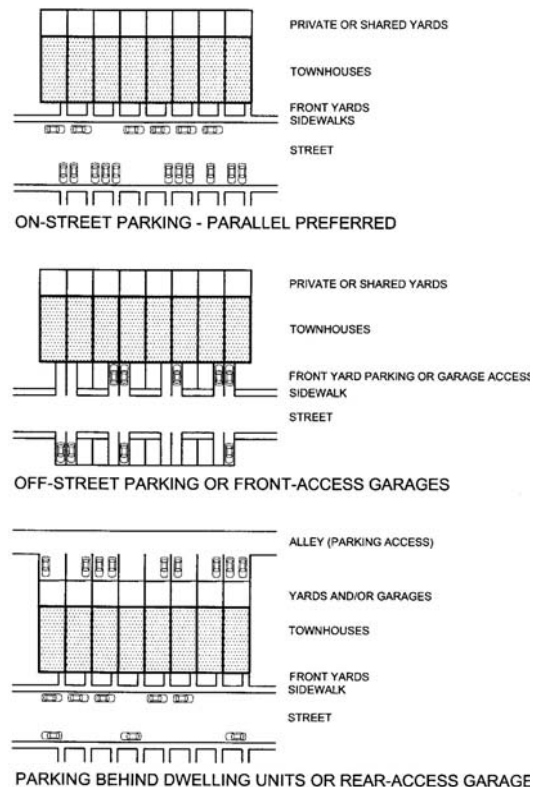
Data -
4-8 units/building
1-3 floors/building
net site density: 12-35 units/acre

Characterised by relatively narrow and deep proportions with windows at the front and back.

Access to sunlight depends on the orientation of the lot. Terraces whose windows only face east or west are the most constrained.

Characterised by relatively narrow and deep proportions with windows at the front and back.

Allows for private entries to individual dwellings within a narrow street frontage, thus minimizing length of utility runs and provides relatively low rise dwellings with medium to high density.



A typical townhouse plan. Although dimensions and details may vary, the basic layout provides a practicle arrangement of rooms in a limited-width building

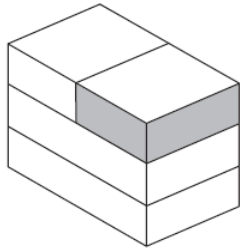


A row of contemporary townhouses detailed in steel and glass, Wohnbebaug. Jugerhsld, Germany, shows a successful high-tech vocabulary.

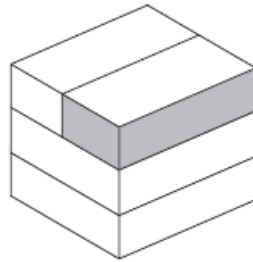


Row houses in Hastings, United Kingdom shows the great variety that can be achieved in two and three story row houses of a consistant width

Low Rise Apartments



Multiple dwelling units arranged in rows,
each with exterior ground floor access



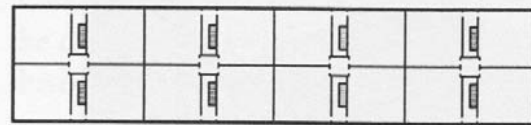
Data -
4-16 units/building
2-3 floors/building
net site density: 15-68 units/acre

Single street entry serving a
number of dwellings

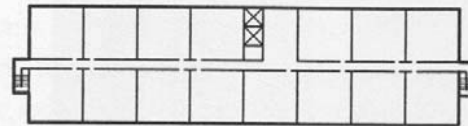
At least two sides with windows
results in comfortable light and air
quality of indoor spaces.

Parking is a challenge due to high
lot coverage.

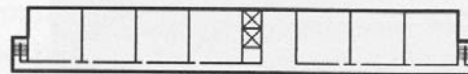
Ground is typically shared to some
degree.



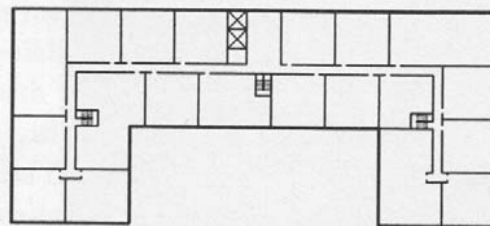
GARDEN APARTMENTS



DOUBLE-LOADED CORRIDOR



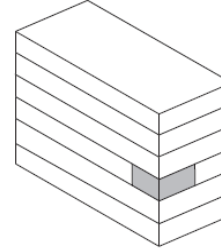
SINGLE-LOADED CORRIDOR



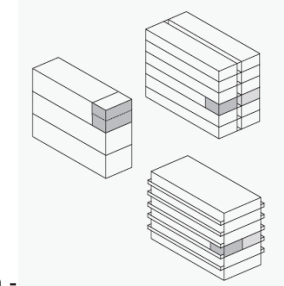
COURTYARD BUILDING

variations in building layout for
low-rise residential buildings

Mid Rise Apartments



Multiple dwelling units arranged in rows,
each with exterior ground floor access



Data -
60-240 units/building
5-8 floors/building
net site density: 26-148 units/acre

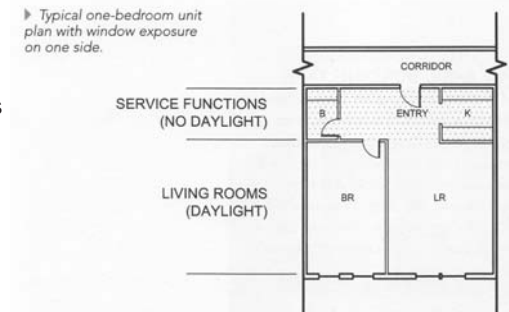
Mid-rise housing started to emerge as
lifts became more reliable and afford-
able.

Early versions were usually U or E
shaped around courtyards to produce
the longest perimeter and thus
maximise daylight access.

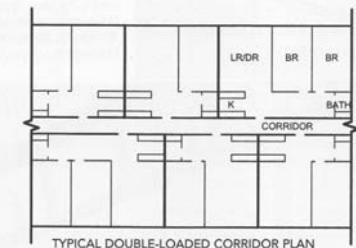
Building bulk is large but can be shaped
to respond to surroundings.

Internal layout is vital for liveability.

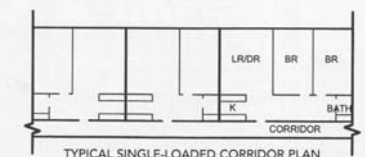
Variations in building plans include
skip-top plans with a corridor only on
every second or third floor. The units
are two stories entered from the
corridor with internal stairs.



Typical double-loaded
and single-loaded building
layouts.



TYPICAL DOUBLE-LOADED CORRIDOR PLAN



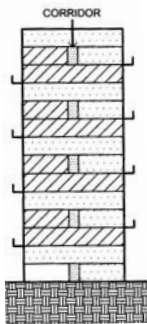
TYPICAL SINGLE-LOADED CORRIDOR PLAN

Mid Rise Apartments

Ground is usually shared. Possibilities for private outdoor space are limited to balconies and rooftop.

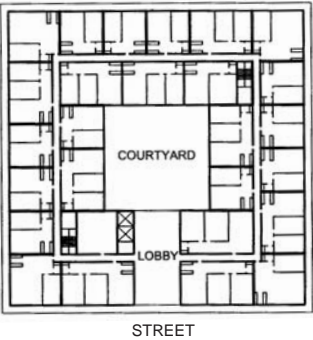
Can incorporate a variety of unit sizes and affordabilities seamlessly.

Density can support frequent transit service and local shopping, and be near regional amenities such as downtowns



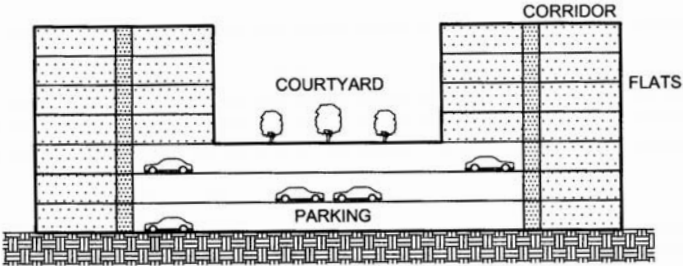
Section showing the elevator skip-stop concept

Diagram of building that continues the line of the street and creates a private courtyard in the middle of the block of apartments

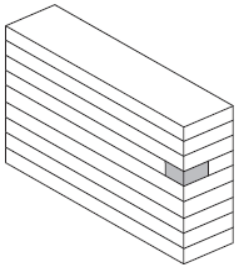
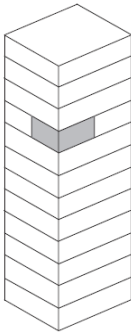


STREET

Section showing dwelling units that wrap around a parking structure to take advantage of exterior exposures, hide parking, and create a more attractive street edge. A courtyard over parking can create attractive outdoor space and allow daylight into dwelling units on either.



Mid Rise Apartments



Data -
60-300 units/building
8+ floors/building
net site density: 60-300 units/acre

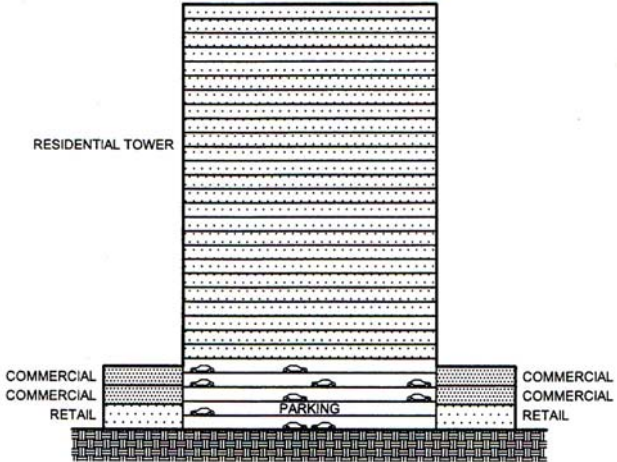
Rising at least eight stories on small foot print, this type is characterized by interior access to units, and a limited range of unit type.

High rise housing is a relatively recent phenomenon made possible by the development of economical steel structural systems and efficient elevators in the late 19th century.

Strong possibility of preserving open space, at the expense of large shadows, interrupted views, and extreme scale shift from lower surrounding densities.

An increasingly common high rise housing type combines parking and retail in a mixed-use low base that defines the street edge relative to lower buildings around it

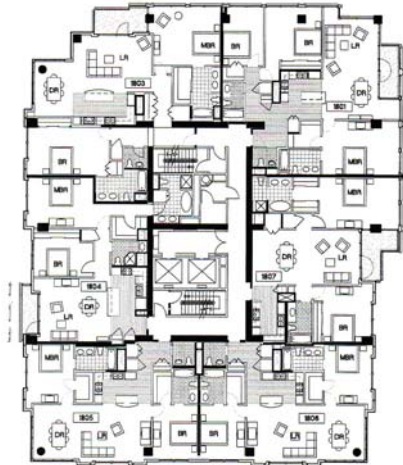
Section showing a high-rise development occupying a whole The base holds parking, wrapped by



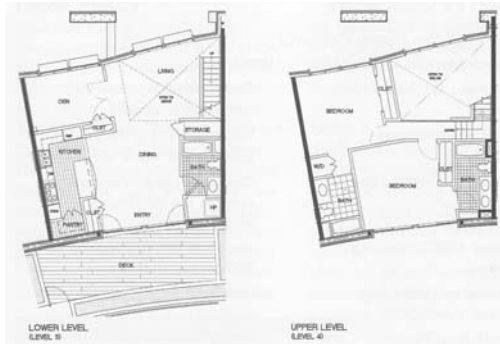
High Rise Apartments

Shared entries, hallways, elevators, and stairs require careful design for sociability.

Personalization of units is difficult except at interior unit entries.



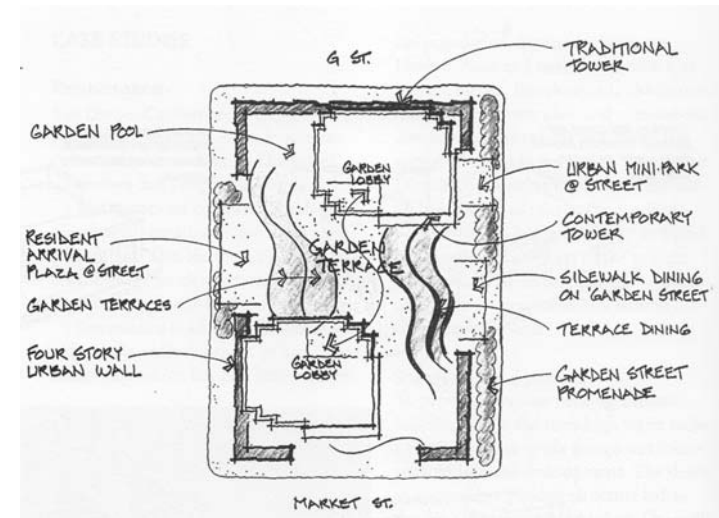
Tower floor plans allow for a variety of unit designs, including four corner units per floor.



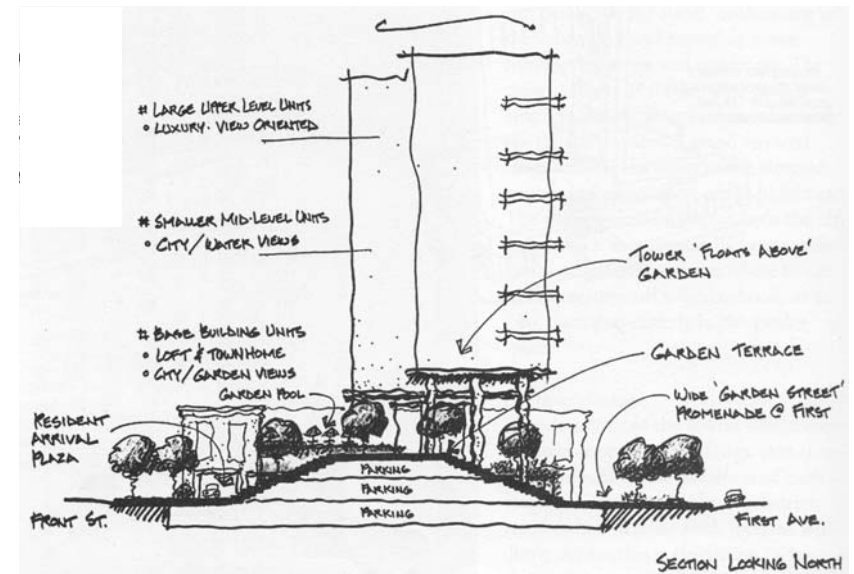
Floor plans of a two-story townhouse that opens onto the garden-terrace level.



This typical two-bedroom tower unit at Renaissance has a balcony with views of the San Diego bay and skyline.

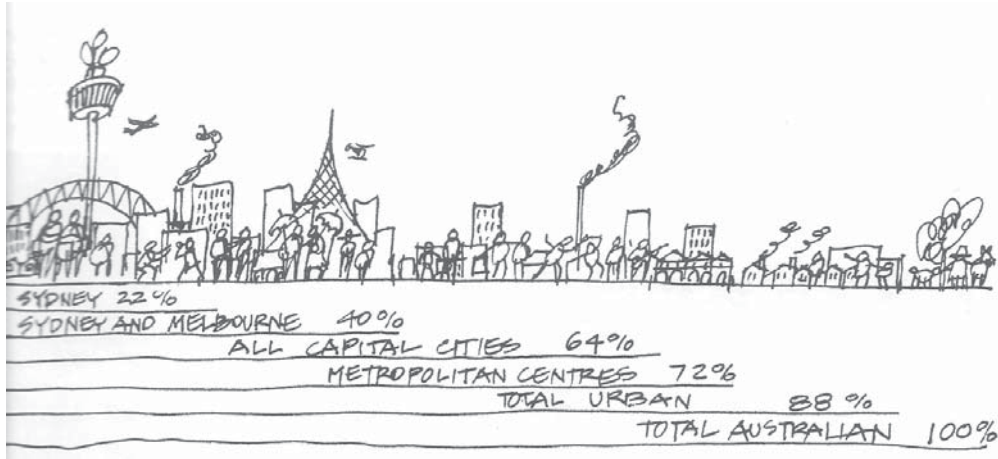


A sketch of the site plan of Renaissance provides an overview of the site's mixed-use components.



This sketch of building illustrates the creation of garden terrace common area by berming the above-ground parking structure.

Housing in Perspective



Australia has 88% population living in major cities and still every Australian dream to own a detached house on a quarter-acre block in suburbs. The dream reflects social expectations fostered by advertising. As a result of internal & overseas migration cities are growing rapidly.

The Inner Suburbs -

The inner suburbs developed around the initial settlement area. Housing in these suburbs was often in the form of small cottages, row houses. During last ten years an increasing number of inner city houses have been purchased, restored and renovated to provide housing for both low and higher income earners.



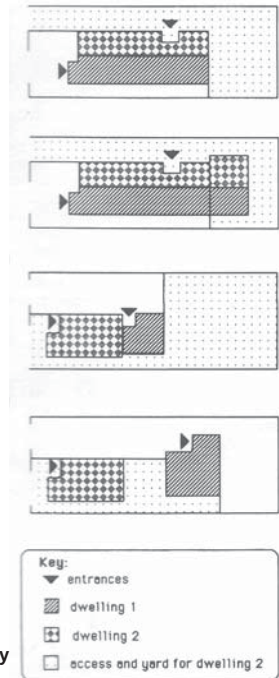
The Middle Suburbs -

Public transport, including rail contributed to growth of these suburbs. Once they were made accessible with public transport, the middle suburbs developed rapidly with detached houses. The relative ease of travel to the city for work made living in middle suburbs a combination of city and rural living.

These middle suburbs have good public transport facilities and capacity to develop different forms of housing to suit the need of diverse population. Many councils are now allowing Dual Occupancy in these suburbs by permitting

- Granny Flats
- Existing dwelling divided in 2 sections
- Existing dwelling to be added and divided into 2 sections

Examples of Dual Occupancy



The Outer Suburbs -

Many of the outer suburb houses are designed for parents with two children. Financial force make many people to live in these outer suburbs, as houses and land tend to be cheaper than inner city areas. Other residents are either first buyers, people with children who dislike living in crowded, polluted inner city areas. There is very little space left for new houses in inner and middle city suburbs, so developers and individual land ownerstned to build in outer suburbs



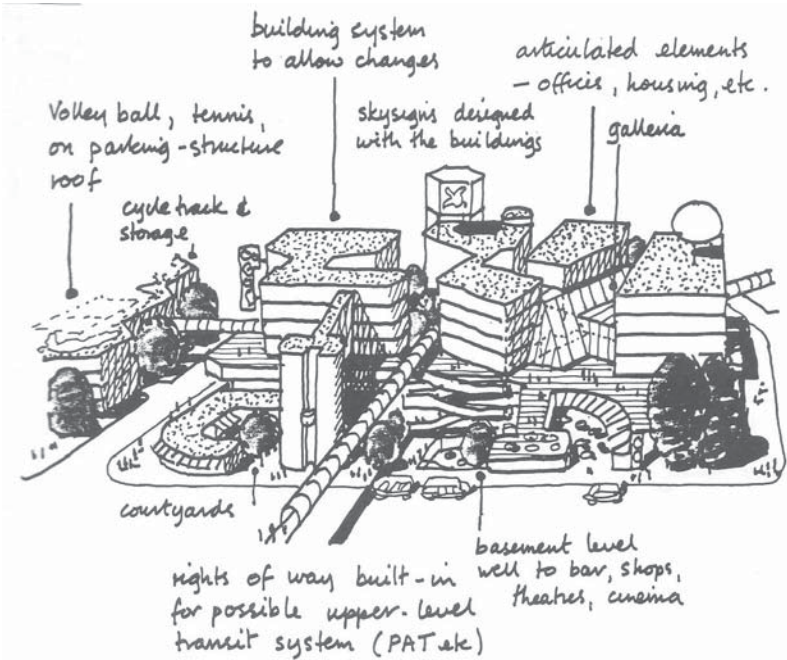
Housing Typology

There are four main categories of housing form:

- 1. Detached or freestanding housing (a low-density typology not investigated in this research).
- 2. Attached housing where each unit is joined side by side or one above the other, with a separate outdoor entrance and often a private outdoor space.
- 3. Apartments/flats where several dwelling units share a common (usually indoor) access and area enclosed by a common structural envelope.
- 4. Hybrid housing where two or more forms are mixed.

Housing Typology	Floor Area Ratio (F.A.R.)	Net Density
Single family	Upto 0.2	upto 20
Row houses	0.5	40-60
Stacked townhouses	0.8	60-100
Three storey walk	1	100-115
Six storey elevator apartments	1.4	160-190
Thirteen storey elevator apartments	1.8	215-240

Ground Coverage	Building Height		
	High (over 6 storeys)	Moderate(over 3-6 storeys)	Low (over 1-2 storeys)
High (Over 50%)		Dense Walkups	Courtyard Housing
Moderate (10-50%)	High Slabs	Ground-access walkups	Attached Houss
Low(Under 20%)	Towers in the Green		Free Standing housing



Attention is given to indoor and outdoor spaces

Particular housing typologies produce particular densities. Each house type has an appropriate density within a sizeable range of densities. Three factors are used to determine the density associated with a particular house type:

- parking (how to store the automobile – and how many to store);
- the amount of private and communal open space; and
- the privacy distances between facing windows.

As a general guide, they provide some typical densities for the different unit types. They state that any house type can be built at lower densities than shown below, but economically as well as in terms of maintaining community facility thresholds, it may be difficult to justify figures that are much lower.

Mixed Used housing in Burwood



Features -

Burwood road in Burwood suburb is a best example of mixed used small commercial and residential development.

Burwood has mixed use dwelling structure, which includes social facilities and trading space for small or microenterprises. It helps creating vibrant housing environments and support residents' livelihood activities, and enhance their general well-being.

Mixed use commercial space are being used by small restaurants, cafes, small offices and retail shops.

The mixture of uses is vital and necessary for a healthy urban area in Burwood

Mixed use guidelines often result in residential buildings with streetfront commercial space.

Retailers have the assurance that they will always have customers living right above and around them, while residents have the benefit of being able to walk a short distance to get groceries and household items.

Mixed-use development is the practice of allowing more than one type of use in a building or set of buildings. In planning zone terms, this can mean some combination of residential, commercial, industrial, office, institutional, or other land uses.

Burwood is identified as a Major Centre by the NSW Government, Burwood is set to grow significantly in the next 25 years, taking advantage of the area's strong local economy and excellent transport infrastructure. Council is committed not only to maximising the area's growth, but to ensuring that Burwood remains an exciting and vibrant place to live, work and visit.



McMansion Housing



The term is generally used to denote a home with a larger footprint than an older median home and which is often located in a newer, larger subdivision. It is also used to refer to the replacement of an existing, smaller structure in an older neighborhood with a larger and more elaborate home.

The McMansions are not only being built in the outer suburbs. Many of the new subdivisions are developed in inner suburbs by demolishing existing small houses. A small lot the house itself often covering a larger portion of the land is used for construction of new McMansion House.

The general criticisms apparently stem from disagreement over the overall look and feel of the homes as not being "appropriate" for a given neighborhood, being wasteful in terms of space (too much room for too few people), perceived pretentiousness (and lack of taste/refinement) of the owners, differing architectural preferences, and a suspicion of social climbing "new money".



<http://www.smh.com.au/national/how-the-mcmansion-supersized-the-suburbs-20091204-kaxv.html>

Semi Detached Housing in Chippendale



Advantages -

- Efficient use of land through high density low-rise construction
- A range of densities can be achieved depending on the urban context
- Shorter service runs than those for free-standing houses
- Compact and inexpensive relative to other types, yet providing direct access, unit identity, private open space and relatively high levels of privacy
- Potential for shared walls to reduce exposure to elements and reduce construction costs
- No interior spaces that are public or that have to be shared with other residents or neighbours
- Direct access from each unit to the street
- Conservation of space while providing desirable amenities.
- Choice of location can support viable public transport systems
- Walkable neighbourhoods result from pedestrian scale and density of development
- Cost reduction techniques of mass housing are applicable ground floor yard space for individual units

Features -

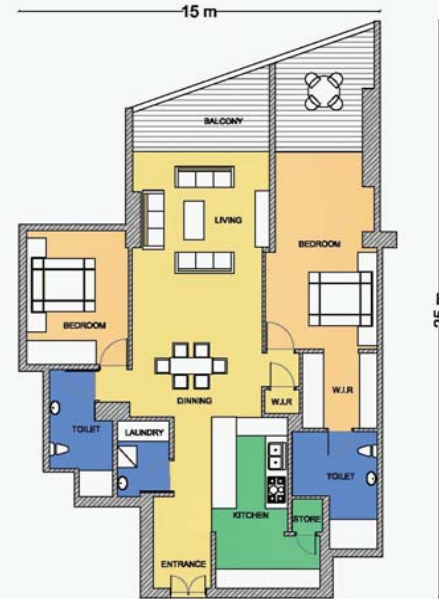
- Units configured as simplexes or duplexes, adjacent to each other or stacked to heights of 2 storeys
- Suitable for smaller scale infill projects and general densification by sub-dividing existing properties or adding units to existing property
- Design and layout to create adequate private ground floor backyard space for individual units



Disadvantages -

- Limited use of plot area for extension or planting
- Access to backyard of row house only possible through the main unit
- Lower levels of privacy and higher sensitivities to noise from neighbours caused by shared walls
- Users fear that personal identity may be lost in a row housing complex

Meriton High Rise Apartments



Features -

These luxury apartments incorporate the latest design principles, catering for the complete modern life. Between 1, 2 and 3 bedrooms. The apartments include every modern convenience, including study rooms and media alcoves, individually controlled air-conditioning and wiring for the TV and high speed internet access.

- Suitable for new build social housing and public rental housing projects, as well as general densification
- Layout forms a defensible enclosure that provides a reasonable degree of privacy, private outdoor space and ground orientation at higher densities.
- Common facilities could include gardens, play areas, parking, roads, drying yards, laundry

Advantages

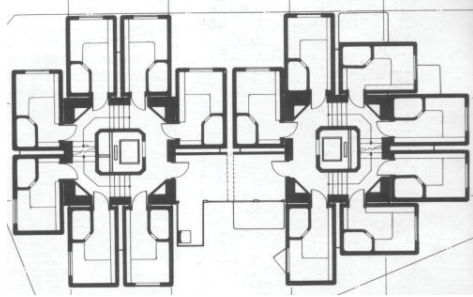
- Efficient use of land through high-density low-rise construction
- Combination of different typologies create a mix of units and affordability levels within the same development
- Suitable for the adaptation of hostels
- Provision of safe outdoor areas, especially for children
- Achievement of social benefits by aggregating shared open space and organising a hierarchy of private, semiprivate and public spaces
- Cost reduction techniques of mass housing can be applied

Disadvantages

- Lack of sufficient community ownership and proper management and maintenance could lead to communal areas becoming neglected and dangerous
- Lower levels of privacy and higher sensitivities to noise from neighbours caused by shared walls and communal spaces



Japanese Capsule Housing



Each capsule is connected to one of the two main shafts only by four high-tension bolts and is designed to be replaceable.

The capsules were manufactured in a factory and transported to site by truck. They were then attached to the tower's central beam. The capsules were designed to be removable and replaceable from the central beam.

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Even the seemingly small space inside the capsules can be modified.

It can be increased by connecting capsules to other capsules. The tower's simple, minimalist design was deliberate.

Australian Detached House



For a couple without children need a self-contained unit, which could be the first stage of a house, or it could be a small dual occupancy dwelling.



When children arrive and family grows. This housing need is for small dwelling with a separate sleeping area for children.



When children are older they need a place of their own in house. This leads to extension the house as an Independent unit, like Granny Flat.

This detached Independent Unit provides home for old couple while the young couple can start their life in main part of the house.

Personal Reflection

When making decisions about the choice and appropriateness of different housing typologies, consideration must be given to the availability and cost of land, the socio-economic profile of endusers.

- There is no direct relationship between density and quality of housing. Consideration of and attention to a range of design and process factors relating to housing typology has the potential to enable vibrant and sustainable higher-density environments in well-located areas.

- The quality of life of the household is greatly affected by spatial arrangements such as unit type, unit plan, layout of sites/buildings and open spaces. Tension is created when these spatial arrangements enforce or imply ways of living contrary to households' expectations, role behaviour and values.

The success of higher-density housing depends more on how the spaces between buildings are treated than on the interior design of units. A preference exists in housing environments for territories that are marked, that have clear boundaries and that make visual contact possible with the surrounding areas.

- When making decisions about the choice and appropriateness of different housing typologies, consideration must be given to the availability and cost of land, the socio-economic profile of end-users, the urban context and natural systems. Architectural, urban design and planning solutions that are not based on adequate knowledge about the end-users' expectations, needs and values may have unintended consequences that are contrary to the intentions of planners and designers.

- The creative use of different housing typologies opens up new possibilities of increasing densities in the form of infill housing in urban areas. A range of different housing typologies and the creative application thereof should be used to achieve different densities and types of housing environments that aim to meet the social, economic and environmental needs of as many households as possible.

- A combination of typologies used in the same development for different income groups and household configurations enable residential environments to offer choice and diversity, especially relating to sustaining local economic development. The promotion of mixed-use, which includes social facilities and trading space for small or micro-enterprises can help create vibrant housing environments and support residents' livelihood activities, and enhance their general well-being.